

when most of the inhabitants were asleep, this earthquake was recorded in all neighbouring villages and at Vera, on the south of the Pyrenees chain. This contradicts the observations made in Japan, where mountains seem to stop earthquakes. Taken unawares at St. Jean de Luz, I did not note down how long the sound lasted before and after the shock. This should be attended to, if possible, in all similar phenomena, for we have as yet no permanent self-recorder of sound.

Although notable earthquakes are of rare occurrence in Europe, slight ones frequently happen. I have observed two microscopical ones near Hendaye. Our imperfect knowledge of their times and causes would be improved if our meteorological observatories had proper seismometers telling their own tales. Perhaps they should be of three kinds : for serious earthquakes, for slight shocks, and for earth-tremors.

Paris, May 26

ANTOINE D'ABBADIE,
de l'Institut

THE earthquake was felt by an invalid in bed at Dudbridge, a mile south-west of Stroud, Gloucestershire. The house stands on the Middle Lias. It was also felt at Stonehouse, three miles west of Stroud on the Lower Lias. The New Red dips under the Lias, about seven miles west of Stonehouse, at the well-known section at Westbury-on-Severn. It is presumed that the Carboniferous Limestone exists under the New Red. It is visible three miles to the west of Westbury.

May 23

A. SHAW PAGE

Instinct in Birds

I READ with special interest the letter signed "Wm. Brown" in NATURE of the 15th (p. 56). I regret I cannot see the letter to which it refers. My excuse for intruding on your limited space is that I have something to say about a magpie's nest. My text is words in Mr. Brown's letter, "I have often seen the nest shot down." Some years ago seeing a magpie fly from her nest I climbed the tree to see what was in it. I found six eggs, but *not magpies'*. They were *starlings'* eggs on which the magpie was sitting. I visited the tree several times, and always found the magpie sitting on the starlings' eggs. To my great regret, on finally coming to see how the magpie and her foster brood were getting on, I found a shot-hole through the nest, and magpie and eggs knocked to pieces.

R. S. S.

Edinburgh, May 21

P.S.—My regret was the greater as I could easily have prevented this by asking a neighbour's keeper to let the nest alone. The magpie lays as a rule seven eggs. There were six starlings' eggs in the nest. I saw no starling near the place, and as it was in the middle of a dense fir wood, I was the more astonished to see starlings' eggs there.

A Remarkably Brilliant Meteor

TO-NIGHT, about 10.45 p.m., I was "stepping westward," about half a mile east of my house. Suddenly the ground before me was lighted up with noontide splendour by a luminary that was above me and behind me. Looking back I saw a meteor a good deal east of the Great Bear, and nearly as high in the sky. It was about as big as Venus, and of the same hue. It was speeding from north to south with a slight descent. Its course very soon came to an end. It left behind it a streak of duller lustre; this phosphorus-like trail vanished almost at once. The career of this meteor while that body was visible here, lasted little, if at all, longer than a minute, but its light was remarkably brilliant.

JOHN HOSKYNs-ABRAHALL

Combe Vicarage, Woodstock, May 20

Right-sidedness

AN unprofessional account of a case of paralysis lately in the West London Hospital may be of interest as corroborating the assertion of Mr. Wharton (in his letter of March 20) that in paralysis of the left side it is the right eye which suffers, and *vice versa*. The left arm and leg of a child in the above hospital (whom I only knew as "Alice") were in almost constant jerking motion, and the left side of the face was motionless. The left eye, however, was normal and bright; while on the right side of the face, which did all the talking and laughing, the eye was half closed, and one could see under the drooping eyelid that the pupil was dilated till but a narrow margin of iris was visible.

E. H.

MODERN TRAVEL—A SCIENTIFIC EDUCATION

THE teaching of geography has come to rather a sad pass in this country, as was evident from the address of the President at the Anniversary of the Royal Geographical Society on Monday. The Society's examiner, Prof. Moseley, reports that it is entirely neglected in our public schools; and the Council of the Society have withdrawn the public schools medals which they have awarded for years, simply because there are so few candidates for them. In our great public schools geographical teaching has no recognised place; if taught at all it is only as a voluntary subject, which may or may not be taken at the caprice of the boys. Some attempt has been made to methodise the teaching of the subject in schools under Government inspection, but so far the result has not been very successful. No doubt the Science and Art Department and the University examiners have done much to improve the teaching of what is known as physical geography in our middle-class schools; but at the very best we are a long way from perfection in this important branch of education, which, were it not for unintelligent teachers and dry text-books, ought to abound with interest. One serious defect in our system of teaching the subject is the want of proper apparatus; maps are good enough in their way, but it is not easy to persuade the pupil that they represent anything more than a flat surface. They are a poor substitute for the models which we find in some Continental schools, supplemented as these are by large-scale, well-executed pictures of the leading natural and artificial features with which geography deals. If Miss North's gallery of pictures at Kew could be taken round the country at intervals for exhibition to our schools, it would do more for giving a real conception of what geography is than many text-books. Let us hope that the step taken by the Royal Geographical Society, in appointing an inspector to visit Continental schools and report on the whole subject, will lead to real reform.

Of course the most effective and impressive method of education in geography would be to take the pupil all over the world, and let him see with his own eyes the many wonderful and beautiful features of our earth, which as lists of dry names weary his soul in his text-book. This is a method recently followed to some extent in certain of the French high schools. The best pupils are taken during the vacation to some important foreign centre, like London or Berlin, Christiania or Stockholm, from which excursions are made to the leading natural and artificial features of the country. Every tourist is indeed more or less of a practical geographer, finding fresh energy, education, and interest in those very things which when at school he abhorred. But we fear that many tourists pass through a country, if not with their eyes closed, at least without any training whatever as to what they are to look for; and unless the best-intentioned tourists have been so far instructed, their travels will do them little good. Hence the great educational value of a carefully-compiled guide-book; and how important such a guide-book might be made as a means of geographical and scientific instruction may be seen from the handsome "Orient Line Guide" before us.¹ It is in most respects very different from any of the volumes with which Murray and Baedeker have made us familiar. It is meant neither for knapsack nor pocket, but evidently for the saloon table. It is a broad folio, handsomely printed and abounding in fine large-scale illustrations and maps by Maclure and Macdonald. Every one who has gone a long voyage must have felt its tedium in spite of amusements of all kinds; but with the aid of the "Orient Guide" every day ought to bring fresh interest and fresh means of instruc-

¹ "Illustrated Guide of the Orient Line of Steamships between England and Australia." Issued by the Managers of the Line. (London: Maclure and Macdonald.)

tion. The illustrations themselves are of much interest; plans and portraits of several of the magnificent ships of the Line, views of many places and scenes from Gravesend to New Zealand, star-charts which may furnish a nightly education in astronomy as well as navigation, and maps of all the countries along the route.

When we say the work is edited by the Rev. W. J. Loftie, it will be evident that it is of an unusually high stamp. The special feature of the text is that besides the information about the Line and its ships, instructions to passengers and such like useful hints, we have special articles on seamanship, navigation, natural history at sea, and weather at sea. All the leading features along both the Suez route and the Cape route are pointed out and information given about them as the voyage proceeds, while special chapters are devoted to all the Australian colonies, to Egypt, the Holy Land, Italy, European cities, and the mother country. Thus it will be seen that the "Orient Guide" is adapted for the use of voyagers from both ends of the route.

As a means of conveying some practical knowledge of science, and arousing an interest in the subject, the chapters on seamanship, navigation, meteorology, and natural history must be particularly useful. Under "Seamanship" we are informed about all the most important points in the structure and working of a vessel. Such common terms as "running," "reaching," "beating," are explained, as are also the causes of the various motions of a ship—rolling, pitching, scudding, and so on; the various rigs of ships, the different species of ropes and knots, the various phrases shouted in working the helm, and other terms in nautical phraseology. The chapter on navigation ought to be particularly welcome to landmen; by means of it the mere progress of the vessel itself, the daily operations of the officers in connection therewith, the conduct of the compass, the reading of charts, the use of the sextant, the various methods of ascertaining longitude, the use of the log, and so on—all can be made to furnish the passenger with constant sources of interest, and give him some idea of the many and complicated scientific principles which underlie so apparently simple a matter as the navigation of a steam vessel. The chapter also contains much information about the stars and their utility to navigation. The star-charts which accompany the chapter are not overloaded with names, and will be found of real utility in detecting the leading stars and watching their nightly changes as the vessel proceeds on her course.

The chapter on natural history contains succinct information on the leading forms of animal life likely to be met with during the voyage—land, coast, and ocean birds, fish of various kinds, cetaceans, the nautilus, zoophytes; while the marvellous phenomenon of the luminosity of the sea is explained. By a study of the chapter on the weather at sea, passengers may be able to throw more intelligence and variety into that monotonous and never-ending topic of conversation.

The more purely geographical part of the work is done in considerable detail. All the features met with on both routes are described in the order of their occurrence. Then for the benefit of those going out there are several chapters on the various Australian colonies, on their various aspects, scientific, geographical, and economical. On the other hand, for the benefit of Australians there is a general chapter on European travel, and special chapters on Egypt, Sinai, and the Holy Land, Italy, European cities, and the mother country—all richly illustrated.

Thus it will be seen that the "Orient Guide" is something very different from the ordinary run of guide-books, and that with it as a constant companion on board ship, a voyage to or from Australia may be made a real education. We should like to see other companies follow the example so well set by that of the Orient Line; travel-

ling by sea has now become so common that thus the serious defects of English education in geography might be largely remedied. But even the railway companies might follow the example. Several years ago we noticed a geological guide to some of the United States railways, in which the various formations along the routes were described in the order of their occurrence as the train proceeded. Something of a similar kind might very well be done for English railways, extending the programme, however, to other features besides those relating to geology. Meantime the Orient Line is to be congratulated on its enterprise, and on the intelligence which has guided the compilation of their handsome work. Mr. Loftie has not only edited the work, but written the chapter on Egypt, while other special subjects have been treated by Dr. Charles Creighton, Mr. G. Baden Powell, Commander Hull, and Mr. H. E. Watts.

THE LATE MONSIEUR WURTZ

WE have received the following communication from a Paris correspondent:—

The *éloges* pronounced over M. Wurtz's grave and your estimate of his place in science, doubtless being prepared, will tell your readers the extent of his life-work as a chemist. Indeed the best monument that could be raised to his memory would be a list of the work that has come from the laboratory at the École de Médecine during his thirty-four years' direction. But your readers may perhaps also be interested to know something of M. Wurtz as he appeared to those who were his pupils at the time of his death.

The impression one had at the beginning of M. Wurtz's first lecture was one of utter surprise. Organic chemistry was no longer a dry science full of dry formulae, tiresome, complicated and difficult to remember; for the whole series of chemical transformations appeared as some philosophical romance in which the atoms and groups of atoms had their own particular characters, and could in given circumstances be depended on to act in a particular way. Yet, notwithstanding the picturesqueness of expression, there was no sacrifice of scientific accuracy. His teaching was so skilfully designed that each of his phrases could be interpreted immediately by the theories of thermochemistry and dissociation, which the more advanced student would learn later to apply to the study of organic chemistry, and by whose help the science is being gradually brought more and more to a purely physical stage. In the same way the psychology of the individual characters in life may some day be capable of being interpreted by purely physiological results. But notwithstanding the assertions of some eminent chemists, and notably of Wurtz's great rival Berthelot, no more in chemistry than in psychology is the problem thus reduced to one of rational mechanics. It seems, on the contrary, that for the accomplishment of this end account must inevitably be taken of those atoms for which Wurtz fought so hard, and of which Berthelot and the École Normale still deny the probable existence.

Taken aback at first by the new way of presenting well-known facts, one was soon carried along by the stream of Wurtz's eloquence and by his enthusiasm; and as one came out of the theatre, though Wurtz never left his subject to go into transcendental digressions, one had a feeling of being raised from the common things of life—a feeling of being better in every way for the new revelation of scientific truth.

Wurtz's eloquence was exceeded only by his modesty. He spoke of and praised Hofmann's general method for the preparation of the compound ammonias without mentioning the fact that it was he who discovered and recognised the first compound of this type. He eulogised Berthelot's great discovery that glycerine is a triatomic